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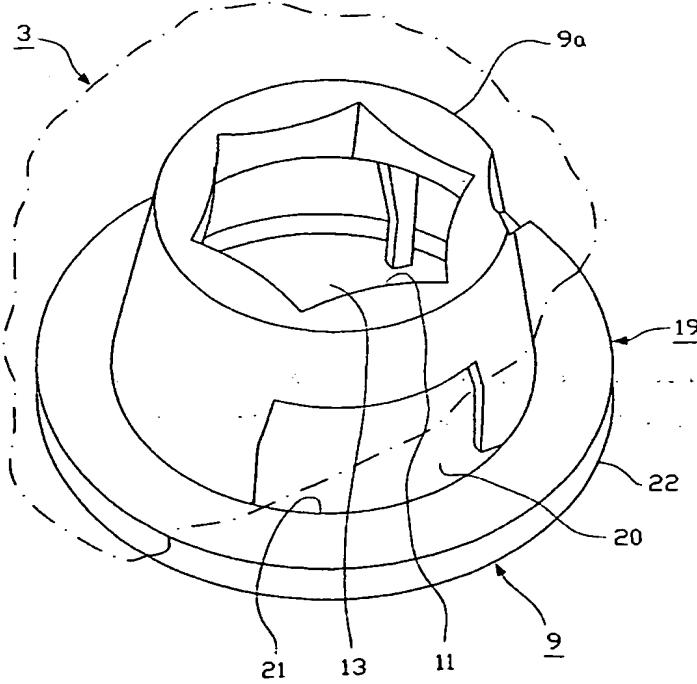
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(54) Title: CONNECTING DEVICE



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and said tubular member (14) respectively.

(57) Abstract: The present invention relates to a connecting device for connecting discharge devices to packages (3) with liquid products, preferably foodstuff products, for discharging said products from the packages (3). The connecting device includes two connecting members which can be connected to each other, namely a first connecting member (9) which has a hole (11), said hole being closed by means of a closing member (13), and a second connecting member having a tubular member by means of which the closing member (13) can be penetrated for opening the first connecting member (9). The tubular member can be inserted into the hole (11) and pressed onto edge portions (16) of the hole (11) in the first connecting member (9). The hole (11) has four, five or six corners (15) and edge portions (16) which extend between said corners and the tubular member (14). The edge portions (16 and 18 respectively) of the hole (11) and the tubular member (14) respectively, are concave and arcuate relative to the centre (C1 and C2 respectively) of said hole (11) and said tubular member (14) respectively, and the concave and arcuate edge portions (16 and 18 respectively) of the hole (11) and the tubular member (14) respectively, connect to each other for defining the corners (15 and 17 respectively) of said hole (11).

1.

Connecting device.

The present invention relates to a connecting device for connecting discharge devices to packages with liquid products, preferably foodstuff products, for discharging said products from the packages, wherein the packages have 5 walls of synthetic material. The connecting device includes two connecting members which can be connected to each other, namely a first connecting member which is located on a wall of the package and a second connecting member which can be connected to said first connecting member 10 for connecting the discharge device to the package. The first connecting member has a hole or a notch for a hole, said hole being closed by means of a closing member, and the second connecting member has a tubular member by means of which the closing member can be penetrated for opening 15 the first connecting member. The tubular member can be inserted into the hole and pressed onto edge portions of the hole such that the tubular member adheres to said edge portions and the connecting members thereby adhere close to each other. The hole in the first connecting member 20 has four, five or six corners and edge portions which extend between said corners and the tubular member of the second connecting member has a corresponding number of corners and edge portions extending therebetween.

It is known at connecting devices with connecting 25 members having holes and tubular connecting members fitting thereto, to design the holes and the tubular members with four, five or six corners. The purpose of designing the holes and the tubular members respectively, in this way is that connection of a tubular member to a hole shall 30 be possible only if the shapes thereof correspond exactly with each other.

However, it has been found that one by means of polygonal tubular members and holes can not entirely exclude 35 misconnections since one by using force during connection can deform the members in which the holes are provided

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and/or the tubular members such that one thereby obtains an acceptable fit between said members.

Thus, it is possible to closely connect cylindrical connecting members, i.e. tubular members of ordinary shape,

5 to connecting members having holes, wherein the holes are polygonal, so that one moves the cylindrical connecting member into the hole with such a force that the edges thereof are deformed and bent inwards until the hole gets a circular shape into which the tubular member fits.

10 The object of the present invention is to eliminate this problem and this is arrived at by providing the initially defined connecting device with the characterizing features of primarily subsequent claim 1.

15 Since the first connecting member of the connecting device has holes and the second connecting member a tubular member, the edges of which are concave and arcuate and connect to each other, it is in practice impossible to deform the edges e.g. by means of cylindrical connecting members, which means that cylindrical connecting 20 members are not connected to the connecting member with a hole. By designing the edges of the hole and the tubular member respectively, in said manner, it is further achieved that the members with holes and the tubular members will fit firmly together but still be easily release-25 able from each other by relative rotation.

The invention will be further described below with reference to the accompanying drawings, in which

25 figure 1 is a schematic side view showing a package and a connecting device according to the invention provided thereon;

figure 2 is a perspective view of a first connecting member of the connecting device according to figure 1;

figure 3 is a perspective view of a second connecting member of the connecting device of figure 1;

35 figure 4 illustrates with a plan view an inner shape of a hole in the first connecting member according to figure 2; and

3.

figure 5 is a plan view of an outer shape of a tubular member of the second connecting member according to figure 3.

5 The connecting devices 1 illustrated in the drawings are adapted for connection of discharge devices 2 to packages 3 with liquid products 4, e.g. foodstuff products, for discharging said products 4 from the packages 3.

The discharge devices 2 may be of different types. They may e.g. consist of or include a hose 5 or similar 10 with a tap 6 and by opening the tap 6 the product 4 can flow out of the package 3 and out through the hose 5 by self-flow. The discharge devices 2 may in another embodiment include a pump P for pumping the product 4 out of the package 3 by generating a negative pressure therein.

15 The package 3 has walls 8 of synthetic material and it consists preferably completely of synthetic material. The material is preferably flexible and the package 3 may be designed as a plastic bag. The package 3 can preferably be placed in a container 7.

20 The connecting device 1 has two connecting members 9 and 10 which can be connected to each other, namely a first connecting member 9 which is provided on a first wall portion 8a of a wall 8 of the package 3 and a second connecting member 10 which can be connected to the first 25 connecting member 9 for connecting the discharge device 2 to the package 3.

The first connecting member 9 has a hole 11 or a notch for a hole 11. The hole 11 is closed by means of a closing member 13. By means of a tubular member 14 of the 30 second connecting member 10, said closing member 13 can be penetrated and then, said tubular member 14 is insertable into the hole 11 until the connecting members 9, 10 are closely attached to each other.

In the embodiment shown, the hole 11 has six corners 15, but it may alternatively have four or five corners 15. The hole 11 has edge portions 16 which extend 35 between adjacent corners (see figure 4). In order to fit

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into such a hole 11 with six corners 15, the tubular member 14 also has six corners 17 (or four or five corners if the hole 11 has this number of holes) and edge portions 18 between these corners 17 (see figure 5).

5 The edge portions 16 of the hole 11 are inwardly directed and/or include members or portions which are directed inwards towards the centre C1 of the hole 11 relative to straight geometric lines L16 which connect adjacent corners 15 between the edge portions 16 to each 10 other. The edge portions 18 of the tubular member 14 are in a corresponding manner directed inwards and/or include members or portions directed inwards towards the centre C2 of the tubular member 14 relative to straight geometric lines L18 which connect adjacent corners 17 between the 15 edge portions 18 to each other.

In the embodiment shown, the edge portions 16 and 18 respectively, of the hole 11 and the tubular member 14 respectively, define concave arcs relative to the centre C1 and C2 respectively, of said hole 11 and said tubular 20 member 14 respectively, and all these arcs may be uniform.

The inwardly directed edge portions 16, 18 may however be designed in other ways than concave arcs and they need not be uniform between all corners.

25 The first connecting member 9 may be provided in such a definite way on the package 3 that the edge portion 16 of its hole 11 get a predetermined orientation relative to the package 3.

In the embodiment of the connecting device 1 illustrated in figures 1-3, the first connecting member 9 is 30 located inside the package 3. A member or portion 9a of the first connecting member 9, provided with the hole 11, is located, preferably welded to the inside of a first wall portion 8a of the wall 8. An unbroken part of said wall portion 8a define the closing member 13 closing the 35 hole 11.

The first connecting member 9 illustrated in figures 1-3 further includes a spacer 19 which is provided to

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hold such wall portions of the walls 8 of the package 3, e.g. second wall portions 8b located right opposite to the wall portions 8a, at a distance from the hole 11 such that these wall portions can not be located so close to 5 the hole 11 that they when emptying the package 3 can prevent or obstruct the product 4 from flowing to the hole 11 and out therethrough. The spacer 19 may have one or more lateral openings 20 and an end opening 21 in an inner part 22 thereof.

10 It should be mentioned that connecting members 9 of said type and their functions have been known for a long time - see e.g. US 4 603 793, figures 3 and 4.

15 The tubular member 14 may have an end edge 36 which is inclined relative to the geometric axial centre line of the tubular member 14. This inclined end edge 36 forms a tip or point 37 which is eccentric relative to the centre line.

20 The first connecting member 9 may instead of the hole 11 have notches therefor and the closing member 13 may in such an embodiment be provided to fill the space 25 between said notches and it may be penetrated by means of the tubular member 14. In such an embodiment, the first connecting member 9 and the closing member 13 may be designed as a unit or the closing member 13 may be attached to the first connecting member 9 and cover the notch.

25 The invention is not limited to the embodiments described above and shown in the drawings, but may vary within the scope of the following claims. It should e.g. be mentioned that the package 3 may contain other liquid 30 or semi-liquid products than foodstuff, such as e.g. pharmaceutical products or glue products.

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Claims:

1. Connecting device for connecting discharge devices (2) to packages (3) with liquid products (4), preferably foodstuff products, for discharging said products (4) from the packages (3),

5 wherein the packages (3) have walls (8) of synthetic material,

wherein the connecting device (1) includes two connecting members (9, 10) which can be connected to each other, namely a first connecting member (9) which is located on 10 a wall (8) of the package (3) and a second connecting member (10) which can be connected to said first connecting member (9) for connecting the discharge device (2) to the package (3),

wherein the first connecting member (9) has a hole 15 (11) or a notch for a hole (11), said hole (11) being closed by means of a closing member (13),

wherein the second connecting member (10) has a tubular member (14) by means of which the closing member (13) can be penetrated for opening the first connecting 20 member (9),

wherein the tubular member (14) can be inserted into the hole (11) and pressed onto edge portions (16) of the hole (11) such that the tubular member (14) adheres to said edge portions (16) and the connecting members (9, 10) 25 adhere close to each other,

wherein the hole (11) in the first connecting member (9) has four, five or six corners (15) and edge portions (16) which extend between said corners (15), and

wherein the tubular member (14) of the second connecting member (10) has a corresponding number of corners (17) 30 and edge portions (18) extending therebetween,

characterized in

that the edge portions (16 and 18 respectively) of the hole (11) and the tubular member (14) respectively, 35 are concave and arcuate relative to the centre (C1 and

C2 respectively) of said hole (11) and said tubular member (14) respectively, and

5 that the concave and arcuate edge portions (16 and 18 respectively) of the hole (11) and the tubular member (14) respectively, connect to each other for defining the corners (15 and 17 respectively) of said hole (11) and said tubular member (14) respectively.

10 2. Connecting device according to claim 1, characterized in that the edge portions (16 and 18 respectively) of the hole (11) and the tubular member (14) respectively, are uniform.

15 3. Connecting device according to claim 1 or 2, characterized in that the first connecting member (9) is provided on the package (3) such that the edge portions (16) of its hole (11) has a certain orientation relative to the package (3).

20 4. Connecting device according to any preceding claim, characterized in that the first connecting member (9) is provided inside the package (3) and located on the inner side of an unbroken part of a wall portion (8a) of the package (3) such that said unbroken part defines the closing member (13) closing the hole (11) in the first connecting member (9).

25 5. Connecting device according to claim 4, characterized in that the first connecting member (9) has a spacer (19) which is provided inside the package (3) such that it during emptying of said package (3) keeps wall portions (8b) thereof at a distance from the hole (11).

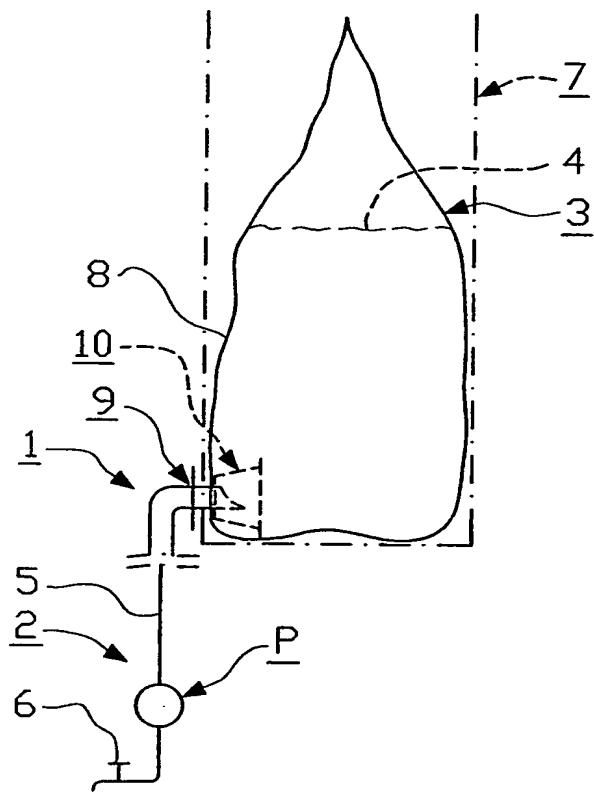
30 6. Connecting device according to any preceding claim, characterized in that the first and the second connecting member (9, 10) respectively, consists of elastic material.

35 7. Connecting device according to any preceding claim, characterized in that the first and second connecting member (9, 10) consist of synthetic material.

8.

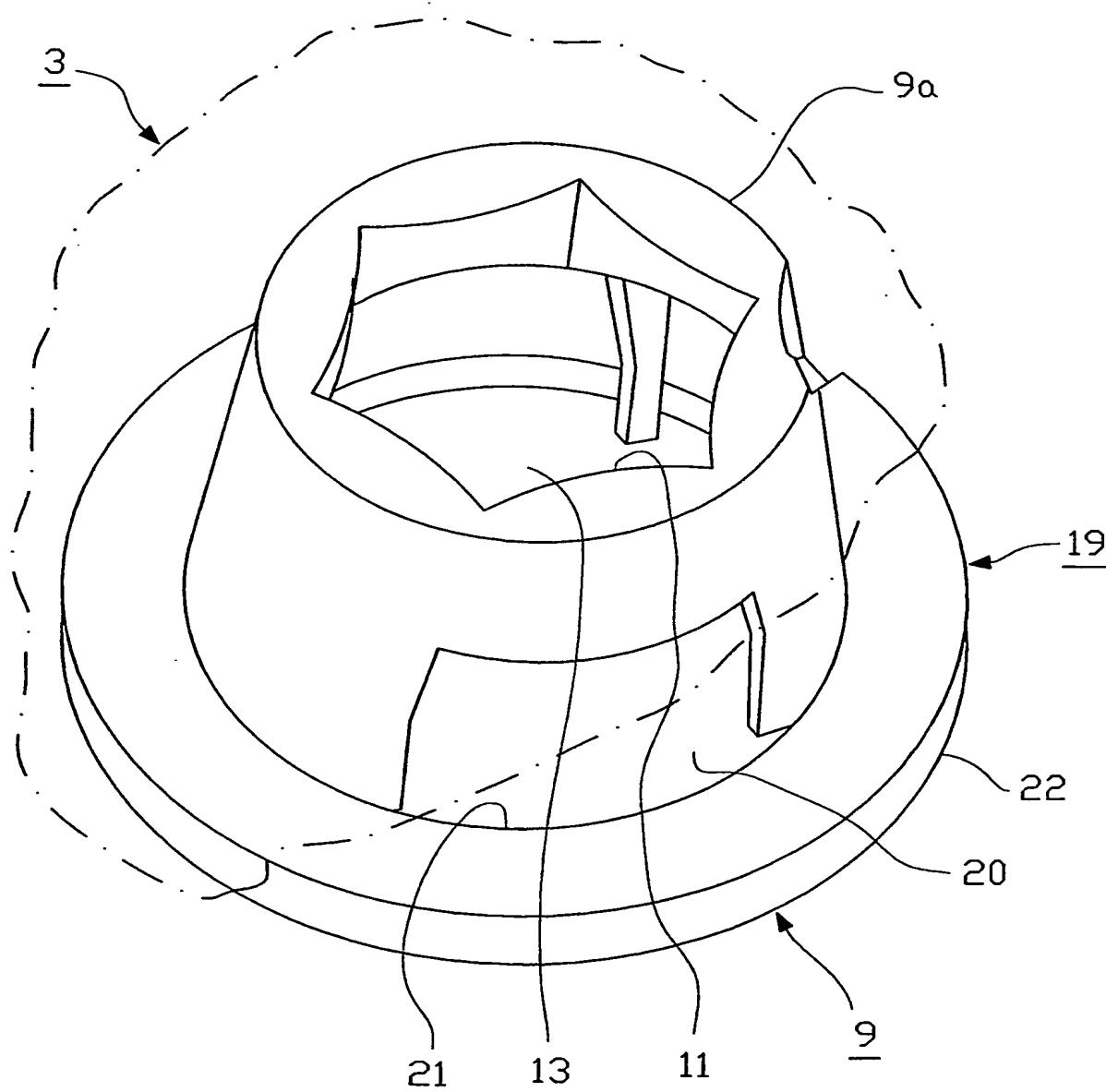
8. Connecting device according to any preceding claim, characterized in that the package (3) consists of flexible material and is designed as a plastic bag.

Fig.1



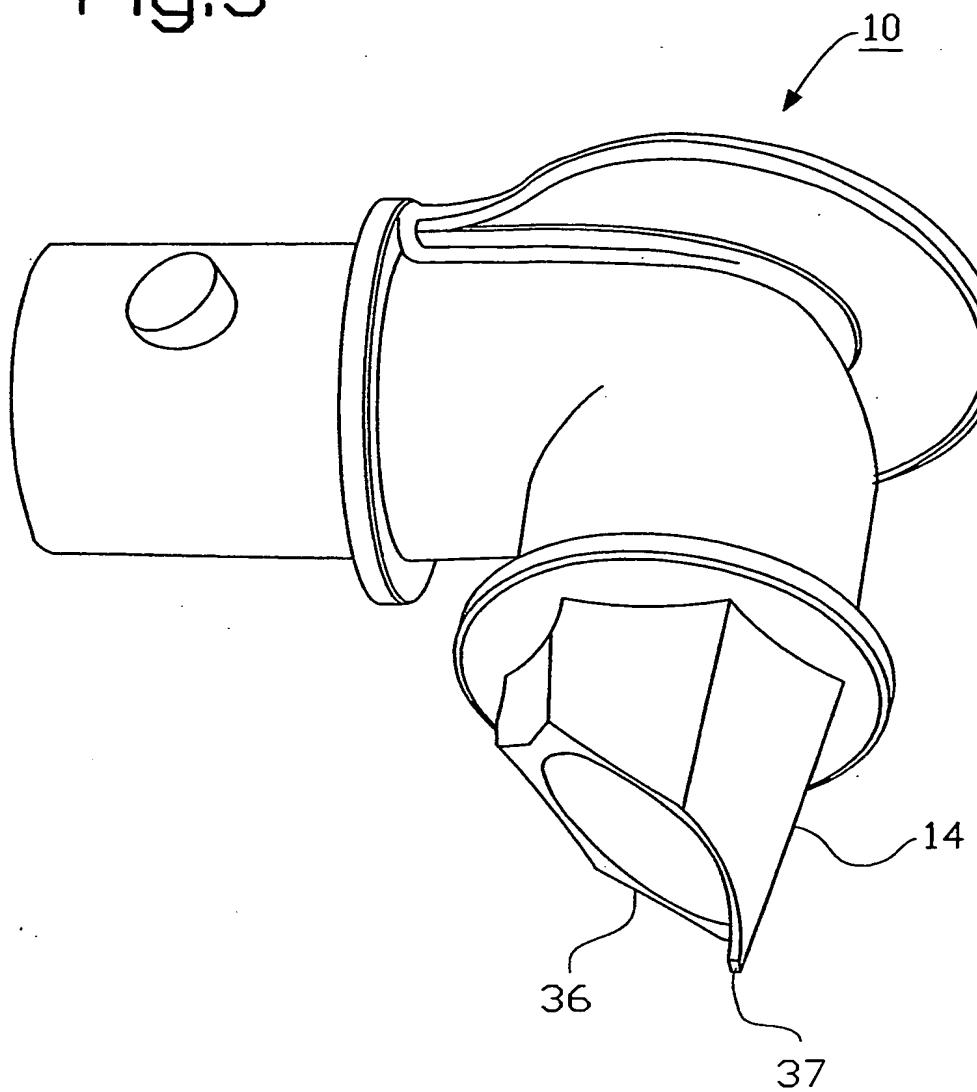
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Fig.2



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Fig.3



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Fig.4

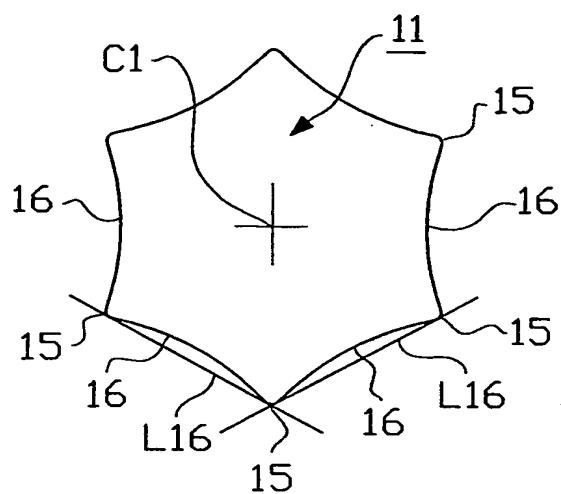
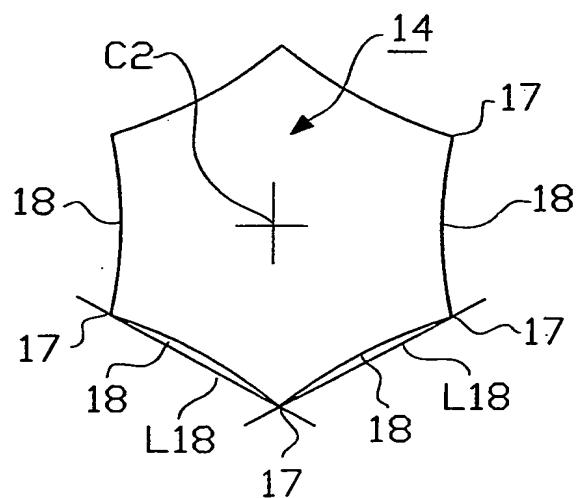


Fig.5



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 03/01628

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B65D 33/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 0226586 A1 (ASEPT INTERNATIONAL AB), 4 April 2002 (04.04.02), page 7, line 21 - line 32 --	1-8
A	SE 445824 B (LEIF EINAR STERN), 21 July 1986 (21.07.86), page 4, second paragraph --	1-8
A	SE 514699 C2 (ASEPT INTERNATIONAL AB), 2 April 2001 (02.04.01), page 12, paragraph 1 and 2 -- -----	1-8

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>	

Date of the actual completion of the international search	Date of mailing of the international search report
22 December 2003	23-01-2004
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. + 46 8 666 02 86	Authorized officer Anette Hall/MP Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT
Information on patent family members

31/10/03

International application No.
PCT/SE 03/01628

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